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Status of the Willow Flycatcher (Empidonax traillii) in Alberta

Bryan Kulba
W. Bruce McGillivray

Alberta Wildlife Status Report No. 29

Alberta Conservation Association

Alberta

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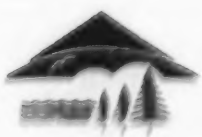

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PREFACE

Every five years, the Fisheries and Wildlife Management Division of Alberta Natural Resources Service reviews the status of wildlife species in Alberta. These overviews, which have been conducted in 1991 and 1996, assign individual species to 'colour' lists that reflect the perceived level of risk to populations that occur in the province. Such designations are determined from extensive consultations with professional and amateur biologists, and from a variety of readily available sources of population data. A primary objective of these reviews is to identify species that may be considered for more detailed status determinations.

The Alberta Wildlife Status Report Series is an extension of the 1996 *Status of Alberta Wildlife* review process, and provides comprehensive current summaries of the biological status of selected wildlife species in Alberta. Priority is given to species that are potentially at risk in the province (Red or Blue listed), that are of uncertain status (Status Undetermined), or which are considered to be at risk at a national level by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

Reports in this series are published and distributed by the Alberta Conservation Association and the Fisheries and Wildlife Management Division of Alberta Environment, and are intended to provide detailed and up-to-date information which will be useful to resource professionals for managing populations of species and their habitats in the province. The reports are also designed to provide current information which will assist the Alberta Endangered Species Conservation Committee to identify species that may be formally designated as endangered or threatened under the Alberta Wildlife Act. To achieve these goals, the reports have been authored and/or reviewed by individuals with unique local expertise in the biology and management of each species.

EXECUTIVE SUMMARY

Willow Flycatchers (Empidonax traillii) range along the eastern slopes of the Rocky Mountains from the Bow Valley south to Waterton Lakes National Park with the majority of breeding records occurring south of the Bow Valley. This species, as its name suggests, prefers willow bushes and other shrubby habitats. In Alberta, it is associated with dry, upland, shrub-dominated sites.

The Willow Flycatcher (Empidonax traillii) is currenly listed 'status undetermined' in the province because its distribution and abundance are relatively unknown. This ranking resulted, in part, from the confusion between the split between Alder and Willow Flycatchers. Song identification is the only reliable method to identify the Willow Flycatcher in the field because it is visually identical to the Alder Flycatcher.

The lack of information about the Willow Flycatcher in Alberta is the greatest weakness in assessing its status. Although this species does not appear to be in imminent danger of extirpation in Alberta, the biggest area of concern if that of habitat loss. Based on data from British Columbia and the United States, the effects of cattle grazing and Brown-headed Cowbird parasitism on Willow Flycatchers in Alberta should be examined.

ACKNOWLEDGEMENTS

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INTRODUCTION

The Willow Flycatcher (Empidonax traillii) is associated with willow bushes and other deciduous shrubs in open habitats across North America. Until 1973, the American Ornithologist's Union (AOU 1973) considered the Willow Flycatcher and the Alder Flycatcher (E. alnorum) as geographic variants of one species called the Traill's Flycatcher. Before the split, it was thought that the Traill's Flycatcher exhibited two song types: a two-note *fitz-bew*, more common in the south, and a three-note *fee-bee-o*. Stein (1963) observed that sympatric populations of Willows and Alders did not interbreed, which led to the taxonomic split. Subsequently, Seutin and Simon (1988) found populations of Willow and Alder Flycatchers in southeastern Canada to be genetically distinct and reproductively isolated.

Poorly documented distribution and abundance of the Willow Flycatcher population in Alberta is due, in part, to the confusion of the split between the Alder and the Willow Flycatchers. Consequently, the Willow Flycatcher was listed as *'Status Undetermined' in the 1985, 1991 and 1996 provincial wildlife status reviews (Alberta Fish and Wildlife 1985, Alberta Fish and Wildlife 1991, Alberta Wildlife Management Division 1996). This report summarizes recent and historical information on the Willow Flycatcher in Alberta and elsewhere in order to facilitate the update of the status of the species in the province.

HABITAT

The Willow Flycatcher breeds in a variety of shrubby habitats across North America. Its habitat preferences are well documented for eastern North America (Stein 1963, Walkinshaw 1966, Barlow and McGillivray 1983), the southwestern United States (Sedgwick and Knopf 1992, Sogge et al. 1997) and the Pacific Northwest (King 1955, Stein 1963, Campbell et al. 1997). Typically, upland sites supporting a mixture of shrubs including willow (Salix spp.), hawthorn (Crataegus spp.) and rose (Rosa spp.) are preferred. Alder Flycatchers are commonly found in more mesic sites but Willow Flycatchers are found in riparian shrubs in the southwestern United States (Sogge et al. 1997) and in willow swales in British Columbia (Campbell et al. 1997) and Ontario (Barlow and McGillivray 1983). In Alberta, the Willow Flycatcher has historically occupied relatively dry, upland, shrub-dominated sites (Semenchuk 1992, McGillivray and Semenchuk 1998). During surveys in Alberta in 1999, Kulba and McGillivray (in prep.) found Willow Flycatchers in shrubby wetlands, road and rail ditches, and brush around lake margins. The species also occurred in the mesic habitats typical of Alder Flycatchers (Semenchuk 1992). The surveys provided no evidence that dry, upland habitats currently support any Willow Flycatchers.

Kulba and McGillivray (in prep.) performed detailed habitat assessments along the eastern slopes on 26 habitat patches supporting Willow Flycatchers in Alberta. The habitat patches were in low-lying areas where water tends to collect such as valley bottoms, lake edges, or ditches along roads. Habitat patches that supported breeding pairs were an average of 8.4 ha in size and ranged from 2-50 ha.

As their name would suggest, willow bushes are an integral part of the Willow Flycatcher's habitat. The average height of the willows in Willow Flycatcher territories is about 2 m and the bushes are often densely packed. Water or grassy areas are often interspersed among the

* See Appendix 1 for definitions of selected status designations

willow patches. Kulba and McGillivray (in prep.) found that most Willow Flycatcher territories contain open water and the remaining sites have water nearby; standing water was typical although some sites contained moving water. The average size of the largest patch of open water on each site was 0.35 ha (Kulba and McGillivray, in prep.). A common feature of most Willow Flycatcher territories in Alberta is the presence of spruce trees or snags that rise above the canopy amid the willow patch. These trees are used for perching and as launching points for display and foraging flights.

CONSERVATION BIOLOGY

The Willow Flycatcher is a small flycatcher (length: 140 mm, weight: 11 g) in the family Tyrannidae, with a medium-dark, brownish olive to grayish olive back and head, two light wing-bars and light underparts with a brownish olive breast band and slight yellow wash to the vent (Pyle 1997). Like all the members of the genus Empidonax, the Willow Flycatcher is insectivorous and catches insects on the wing. Prescott and Middleton (1988) found Willow Flycatchers to have a strong preference for Dipterans (true flies) and, to a lesser extent, Hemipterans (true bugs).

The only reliable method of identifying Empidonax flycatchers in the field is by their songs. This is especially critical when trying to distinguish the visually identical Willow and Alder Flycatchers. Both male and female Willow Flycatchers sing (Seutin 1987). The standard advertising song of the Willow Flycatcher is a *fitz-bew*. It will also emit a sharp, dry *whit* as well a *zbew*. Many sources have noted that the Willow Flycatcher begins to vocalize much earlier in the day than other bird species within the same habitat (Bent 1942, Weydemeyer 1973). In Alberta, vocal displays are often performed from tall spruce trees that offer an unobscured view of the bird's territory (Kulba and McGillivray, in prep.). Where spruce is not present, bare willow branches are often used and in some sites Willow Flycatchers use overhead powerlines as perches. These display perches are also used to initiate foraging sallies. The Willow Flycatcher arrives on its breeding grounds in Alberta in late May (Pinel et al.1993, McGillivray and Semenchuk 1998). Males arrive up to two weeks earlier than females to set up territories (Sedgwick and Knopf 1992). Prescott and Middleton (1988) found territories of Willow Flycatchers in Ontario to average 0.3 ha. McCabe (1991) reports several studies which found Willow Flycatcher territories to be between 0.1 ha – 0.44 ha. Although Kulba and McGillivray (in prep.) did not measure territory size, Willow Flycatchers responded to playback by approaching the source of the sound from distances up to 200 m indicating the potential for substantially larger territories in Alberta.

Willow Flycatchers build their nests in shrubs at the forks of branches. McCabe (1991) found that if shrubs other than willow occur in the nesting habitat, they are selected as alternate nest sites. The height of the nest above the ground is usually between 1.0 and 1.5 m (Campbell et al. 1997). Three to four eggs are laid and incubated for approximately 16 days (Campbell et al. 1997). Both parents take part in feeding the nestlings (Ettinger and King 1980). Nest success for Alberta has not been studied but in British Columbia nest success was 28% (Campbell et al. 1997). Fledging occurs after about two weeks (McCabe 1991). The Willow Flycatcher typically leaves Alberta for its wintering grounds in August (McGillivray and Semenchuk 1998).

DISTRIBUTION

1. Alberta. - McGillivray and Semenchuk (1998) reported the breeding distribution of the Willow Flycatcher in Alberta to range along the eastern slopes of the Rocky Mountains from the Bow Valley south to Waterton Lakes National Park. Areas of high concentration of records are the Bow Valley, Sibbald Flats, and south of the Highwood Pass along Highway 40 (Kulba and McGillivray, in prep.). The bulk of the Alberta records for the Willow Flycatcher are south of the Bow Valley. Breeding records suggest its range extends north to Jasper and east towards Nordegg (Figure 1), although mainly in the Foothills rather than in the Rocky Mountains. Pinel et al. (1993) notes a number of records north of Jasper up to the Kakwa-Grande Prairie area. Many dry upland sites that have historically had Willow Flycatcher records did not yield any sightings during Kulba and McGillivray's

Figure 1. Observation records of the Willow Flycatcher in Alberta, 1995-1999. Data are from the Biodiversity/Species Observation Database maintained by Alberta Environment and Alberta Conservation Association.

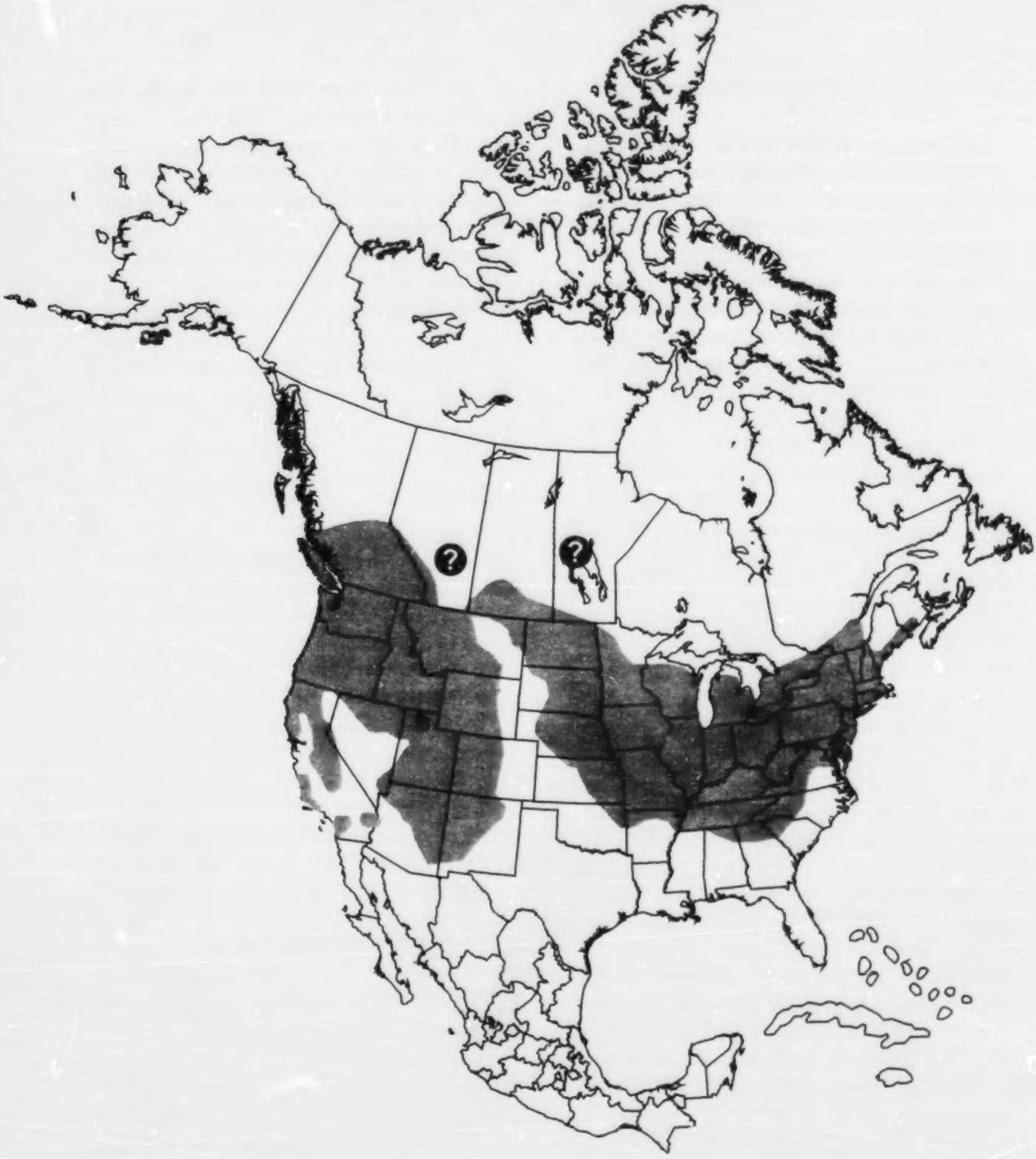

Figure 2. North American breeding distribution of the Willow Flycatcher. Adapted from Dickinson 1999, Sauer et al. 1999. The question marks represent areas with persistent records that are not documented with specimens or song recordings.

(in prep.) 1999 survey. In some areas of North America there have been expansions of the Willow Flycatcher's range northwards, (Stein 1963, Prescott 1987) but there is insufficient information to determine any range changes in Alberta.

Many published maps show the Willow Flycatcher's breeding distribution extending across the southern portion of Alberta, but there are no confirmed and only a few possible breeding records from this area. It is likely that southern Alberta represents a gap between the eastern subspecies (E. traillii campestris) that occurs in Saskatchewan and the western subspecies (E. traillii adastus) that occurs in British Columbia, which otherwise meet south of the Canadian border (see Figure 2). The Breeding Bird Survey (BBS) also shows no records for Alberta in the south (Sauer et al. 1999).

The Atlas of Breeding Birds of Alberta (Semenchuk 1992) produced relatively few confirmed breeding records for the Willow Flycatcher. Several observations were significantly north and east of the expected range. In addition to the Atlas data, Willow Flycatchers migrating through and breeding in central Alberta have been reported (E. T. Jones, pers. comm.). Some experts argue that these extralimital records are misidentifications. The lack of supporting evidence in the form of recorded vocalizations and the uncertainty surrounding the reliability of identification by colour differences and physical measurements (Seutin 1991, Pyle 1997) makes the inclusion of these records in this status update problematic. Experienced birders acknowledge that the distinction between the Alder and Willow Flycatcher's call is not as clear-cut as some commercial recordings would suggest. For instance, a variation of the Eastern Phoebe's (Sayornis phoebe) song is remarkably similar to the Willow Flycatcher's *fitz-bew* (T. Thormin, pers. comm.). Tape recordings of the songs of Willow Flycatchers are effectively a requirement before extralimital observations can be authenticated. Consequently, we are reluctant to consider any records outside of the eastern slopes region as confirmed Willow Flycatcher records.

2. Continental Range. - The Willow Flycatcher has a transcontinental breeding range from southern British Columbia, east across the southern prairies to Quebec and Maine. Campbell et al. (1997) note that the Willow Flycatcher is expanding its range south and east in British Columbia. Its southern range limit is from the west coast in California and to the east across the southern United States to North Carolina and Virginia. A gap in the distribution from Montana south to Texas is apparent (Figure 2). The Willow Flycatcher winters from Mexico to northwestern Colombia (DeGraaf and Rappole 1995).

POPULATION SIZE AND TRENDS

1. Alberta. - During the five census years of the Alberta Breeding Bird Atlas Project (1987-1991) there were only two confirmed breeding records for the Willow Flycatcher (Semenchuk 1992). There were few observations of this species in general, with a concentration in the Bow Valley from west of Calgary to Banff (Semenchuk 1992). Holroyd and Van Tighem (1983) reported the Willow Flycatcher as being a "fairly common" summer resident in the mountain parks. In contrast, the Provincial Museum of Alberta (PMA) collection has only a handful of specimens to document the presence of this species in Alberta. In 1999, Kulba and McGillivray (in prep.) found over 30 sites with Willow Flycatchers in a census from Waterton Lakes National Park to Jasper National Park. The average number of males singing per site was two. These sites constitute the majority of suitable Willow Flycatcher

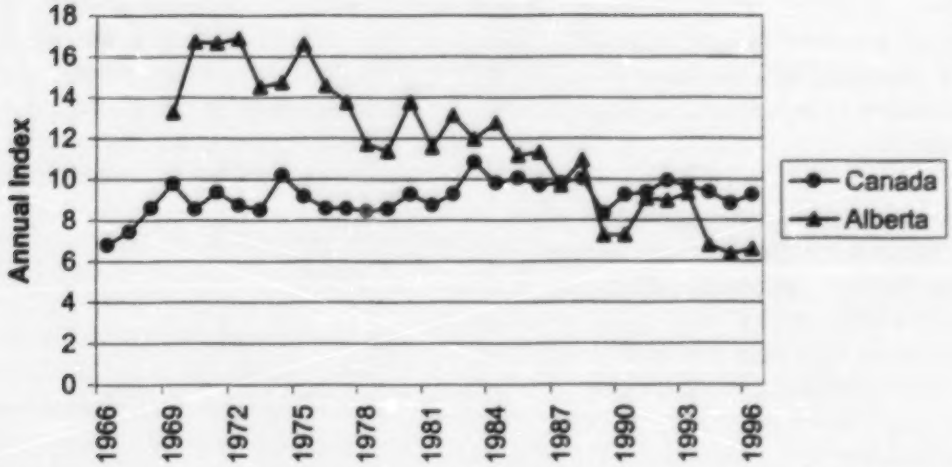

Figure 3. Index of population change of the Willow Flycatcher in Alberta and Canada, 1966-1996. Data from Canadian Breeding Bird Survey (modified from Downes et al. 1999).

habitat that is accessible by road. It is difficult to estimate the extent of available habitat because unlike forested habitats, willow swales have no commercial interest and are not mapped. Undoubtedly the province supports more than 100 pairs but given the lack of reports for this species it is unlikely that the provincial population is greater than 250 pairs.

There have been no studies in Alberta examining population trends for the Willow Flycatcher. Breeding Bird Survey (BBS) data provide the best available estimate of population trends for this species in Alberta (Figure 3). The Canadian Breeding Bird Survey reports Alberta's Willow Flycatchers have experienced a 0.8% mean annual drop in population from 1966-1996 (Downes et al. 1999). Although this trend is not statistically significant ($P > 0.15$), it represents the highest provincial decline for the species in Canada.

2. Other Areas. - Breeding Bird Survey trends for the period 1966 to 1996, show declines in Willow Flycatcher reports from Manitoba, Nova Scotia and New Brunswick, but increases in British Columbia, Saskatchewan, Ontario and Quebec (Downes et al. 1999). Only the 2.3% growth in Ontario is statistically significant ($P < 0.05$). During the same period, BBS data showed an overall 0.6% growth in reports of Willow Flycatchers in Canada (Downes et al. 1999; Figure 3).

Descriptions of Willow Flycatcher population trends in British Columbia range from "very rare" on Vancouver Island to "uncommon" and "fairly common" in the interior of the province (Campbell et al. 1997). Smith (1996) reported the Willow Flycatcher to be "uncommon" in southern Saskatchewan with rarity increasing towards central Saskatchewan. In Manitoba, the Willow Flycatcher is considered "uncommon" in the extreme southwest and "rare" elsewhere in the southern part of the province (R. Koes, pers. comm). Only three confirmed nest records for the Willow Flycatcher in Manitoba were reported by De Smet and Conrad (1988).

In the southwestern United States, the subspecies E. traillii extimus has experienced a population crash because of a loss or modification of riparian habitat primarily resulting from cattle grazing, and reduced productivity from Brown-headed Cowbird (Molothrus ater) parasitism. The estimated size of this population is between 300 and 500 pairs (Sogge et al. 1997). Significant growth in Willow Flycatcher populations has occurred in Oregon because of willow habitat preservation and a reduction of cattle grazing (Taylor and Littlefield 1986). Zink and Fall (1981) found Willow Flycatchers to be "common" in suitable habitat in southern Minnesota. The Willow Flycatcher ranges from "common" to "uncommon" in North Dakota (Stewart 1975) and is considered "fairly common" in South Dakota (Peterson 1995). Boone and Krohn (1998) list the Willow Flycatcher as "common" with a "stable" population trend in Maine.

LIMITING FACTORS

Limiting factors are those conditions that degrade habitat suitability, reduce survivorship of young or adults, or decrease nesting success.

1. Livestock Grazing. - Grazing in willow or brushy habitat often removes the vegetation at the level that the Willow Flycatcher nests (Taylor and Littlefield 1986). However, loss of habitat from cattle grazing, does not seem to be of significant concern in Alberta. Few sites known to support Willow Flycatchers are associated with cattle grazing and most Willow Flycatcher habitat in Alberta is too moist and the willows too dense to be accessible for grazing. Some of the sites on the eastern edge of the Willow Flycatcher's Alberta range may be suitable for grazing, which might limit the expansion of the species towards the east. Many locations with historical records of Willow Flycatchers did not yield any sightings in 1999 (Kulba and McGillivray, in prep.). These were mostly dry, grazed upland sites in the southern foothills. This alone, or a combination of grazing and cowbird parasitism, (see below) may explain the lack of recent Willow Flycatcher sightings in these areas.

2. Cowbird Parasitism. - Brown-headed Cowbirds benefit from the insects disturbed by grazing cattle and are usually associated with livestock. Brown-headed Cowbird nest parasitism is a major limiting factor for Willow Flycatcher populations. Campbell et al. (1997) reported that 44% of Willow Flycatcher nests in interior British Columbia were parasitized by Brown-headed Cowbirds. In Alberta, cowbirds are common in the dry, grazed upland sites where Willow Flycatchers were historically reported, but no longer occur. Kulba and McGillivray (in prep.) recorded cowbirds at several ungrazed, wet lowland sites indicating the potential for nest parasitism in these areas. Several studies in the United States have looked at the effect cowbirds have in these habitats. Tewksbury et al. (1999) suggests cowbird management must be focused on riparian areas in Montana because of the significant loss of this type of habitat and the high host density it offers. In a review of studies in New Mexico and the southwestern United States, Schweitzer et al. (1998) noted cowbird management plans must include habitat enhancement, restoration and preservation. Staab and Morrision (1999) found the incidence of cowbird parasitism decreases with the increase of volume of vegetation below and surrounding the potential host's nest and the presence of medium to large size trees within the habitat.

3. Habitat Loss and Alteration. - In Alberta, the Willow Flycatcher typically occupies habitats undesirable for recreational or commercial developments. Wet, willow

lowlands do not lend well to development, logging or any other man-made modification. The removal of willows and shrubs from lake edges could reduce available habitat, but the greatest risk is lack of knowledge about the importance of 'waste' areas to this species. Road expansion, wetland drainage, or cleaning of rail allowances could also eliminate a significant number of Willow Flycatcher sites.

4. Competition with Alder Flycatchers. - The outcome of interactions between Alder and Willow Flycatchers is unpredictable. Kulba and McGillivray (in prep.) found both species in 10% of sites visited in 1999 and found only Alder Flycatchers in sites that appeared suitable for Willow Flycatchers. Prescott (1986) noted that both species excluded each other from their territories. In eastern Canada, the Willow Flycatcher is thought to be forcing the Alder Flycatcher out of its habitat (Prescott 1987) while studies in British Columbia (Campbell et al. 1997) and Wisconsin (Robbins 1974) show the opposite situation. Alder Flycatchers are far more common in Alberta therefore Willow Flycatchers may be at risk from competition with Alder Flycatchers.

STATUS DESIGNATIONS

1. Alberta. - The Willow Flycatcher was listed as 'Status Undetermined' in the 1985, 1991, and 1996 Status of Alberta Wildlife reviews based on the lack of information on distribution and abundance (Alberta Fish and Wildlife 1985, Alberta Fish and Wildlife 1991, Alberta Wildlife Management Division 1996). The Alberta Natural Heritage Information Centre ranks the Willow Flycatcher as S2 (ANHIC 2000; see Appendix 1 for explanation of ranks).

2. Other Areas. - British Columbia does not list the Willow Flycatcher as a species that is rare, endangered or vulnerable (British Columbia Conservation Data Centre 2000). The species is ranked as S4 in Saskatchewan (Saskatchewan Conservation Data Centre 2000), S3 in Manitoba (Manitoba Conservation Data Centre 2000), and S5 in Ontario (Ontario Natural Information Centre 2000).

Empidonax traillii is listed as G5 according to the Natural Heritage Element Ranking system (The Nature Conservancy 2000). Washington and Montana list the Willow Flycatcher as S5 (Montana Natural Heritage Program 2000, Washington Natural Heritage Program 2000). Oregon lists the status of the Willow Flycatcher subspecies E. traillii brewsterii as 'vulnerable' and E. traillii adastus as 'undetermined' (Oregon Natural Heritage Program 2000). In the southwestern United States, the subspecies E. traillii extimus is considered 'endangered' due to a population crash from loss of riparian habitat, cattle grazing and Brown-headed Cowbird parasitism (USFWS 1995). Arizona, New Mexico, Nevada, California and Utah list the southwestern Willow Flycatcher subspecies as 'endangered', or a 'species of concern'.

RECENT MANAGEMENT IN ALBERTA

No specific management for the Willow Flycatcher has been undertaken in Alberta.

SYNTHESIS

The Willow Flycatcher is present in patches of wetland habitat in the Rocky Mountains and Foothills of Alberta. Because of a lack of study, population size and trends have not been accurately determined. Population size is likely low and BBS data indicate a decline in numbers. The possible limiting factors for the Willow Flycatcher include loss of habitat from human disturbance and cattle grazing, productivity losses from Brown-headed Cowbird parasitism, and competition with Alder Flycatchers.

The lack of information about the Willow Flycatcher in Alberta is currently the greatest weakness in assessing its status in the province. The Alberta population constitutes a tiny fraction of the continental population. From a biological perspective, it is significant that the most northerly populations of this species are in Alberta and British Columbia and that no assessment of the genetic distinctness of northern populations has been made. Volunteer help in documenting other potential breeding areas for this species would be useful if supporting identification aids (primarily song recordings) are provided. Population trends, nest success and survivorship would be necessary to examine the success of the Willow Flycatchers breeding in Alberta and the identification of limiting factors. Although the Willow Flycatcher does not appear to be in imminent danger of extirpation in the province, the biggest area of concern is that of habitat loss. Significant amounts of Willow Flycatcher habitat could be unknowingly destroyed and management plans must consider this. Based on data from British Columbia and the southwestern United States, the effects of cattle grazing and Brown-headed Cowbird parasitism on Willow Flycatchers in Alberta should be examined.

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APPENDIX 1. Definitions of selected legal and protective designations.

A. Status of Alberta Wildlife colour lists (after Alberta Wildlife Management Division 1996)

Red	Current knowledge suggests that these species are at risk. These species have declined, or are in immediate danger of declining, to a nonviable population size.
Blue	Current knowledge suggests that these species may be at risk. These species have undergone non-cyclical declines in population or habitat, or reductions in provincial distribution.
Yellow	Species that are not currently at risk, but may require special management to address concerns related to naturally low populations, limited provincial distributions, or demographic/life history features that make them vulnerable to human-related changes in the environment.
Green	Species not considered to be at risk. Populations are stable and key habitats are generally secure.
Undetermined	Species not known to be at risk, but insufficient information is available to determine status.

B. Alberta Wildlife Act

Species designated as 'endangered' under the Alberta Wildlife Act include those defined as 'endangered' or 'threatened' by *A Policy for the Management of Threatened Wildlife in Alberta* (Alberta Fish and Wildlife 1985):

Endangered	A species whose present existence in Alberta is in danger of extinction within the next decade.
Threatened	A species that is likely to become endangered if the factors causing its vulnerability are not reversed.

C. Committee on the Status of Endangered Wildlife in Canada (after COSEWIC 2000)

Extinct	A wildlife species that no longer exists.
Extirpated	A wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild.
Endangered	A wildlife species that is facing imminent extirpation or extinction.
Threatened	A wildlife species that is likely to become an endangered species if nothing is done to reverse the factors leading to its extirpation or extinction.
Special Concern (Vulnerable)	A wildlife species of special concern because it is particularly sensitive to human activities or natural events, but does not include an extirpated, endangered or threatened species.
Not at Risk	A wildlife species that has been evaluated and found to be not at risk.
Indeterminate	A species for which there is insufficient scientific information to support status designations.

D. United States Endangered Species Act (after National Research Council 1995)

Endangered	Any species which is in danger of extinction throughout all or a significant portion of its range.
Threatened	Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

E. Natural Heritage Element Rarity Ranks (after The Nature Conservancy 2000)

G1 / S1	**Critically Imperiled**: Critically imperiled globally because of extreme rarity or because of some factor(s) making it especially vulnerable to extinction. Typically 5 or fewer occurrences or very few remaining individuals (<1,000) or acres (<2,000) or linear miles (<10).
G2 / S2	**Imperiled**: Imperiled globally because of rarity or because of some factor(s) making it very vulnerable to extinction or elimination. Typically 6 to 20 occurrences or few remaining individuals (1,000 to 3,000) or acres (2,000 to 10,000) or linear miles (10 to 50).
G3 / S3	**Vulnerable**: Vulnerable globally either because very rare and local throughout its range, found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extinction or elimination. Typically 21 to 100 occurrences or between 3,000 and 10,000 individuals.
G4 / S4	**Apparently Secure**: Uncommon but not rare (although it may be rare in parts of its range, particularly on the periphery), and usually widespread. Apparently not vulnerable in most of its range, but possibly cause for long-term concern. Typically more than 100 occurrences and more than 10,000 individuals.
G5 / S5	**Secure**: Common, widespread, and abundant (although it may be rare in parts of its range, particularly on the periphery). Not vulnerable in most of its range. Typically with considerably more than 100 occurrences and more than 10,000 individuals.

B - A rank modifier indicating breeding status for a migratory species.
N - A rank modifier indicating non-breeding status of a migratory species.

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